MONTHLY JOURNAL OF THE MUSHROOM GROWERS' ASSOCIATION

BULLETIN AUGUST 1960 · NUMBER 128

CONTENTS		Page
Editorial: Mutual Aid STUDIES ON THE INFLUENCE OF CARBON DIOX CULTIVATED MUSHROOM: Dr. H. J. Tschie	IDE ON	THE rt V-2) 288
MGA Flyer		
"In at the Top": Major A. L. A. Dredge		296
Ministry's Mushroom Probe merits Public Statement		
Short Composting: Science 2 Still Available		
Stanley Middlebrook's Pinheads	S 35	305
MGA Continental Tour		308
Women Journalists Entertained		313
Correspondence		313
Fancy That!	·	318
Calypso: FP		319
Obituary: J. E. R. Simons		320
Facts and Figures from Australia: G. D. Griffin	1000	320
Weston-Super-Mare Conference		221
Last Month's Publicity Contributions		322
Small Advertisements		324

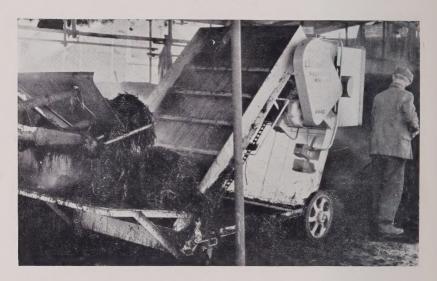




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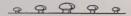
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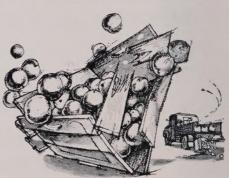


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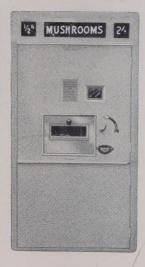




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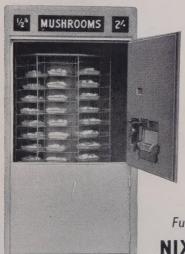


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EDITORIAL

MUTUAL AID

The decision of the MGA Executive to try and foster the idea of mutual aid between growers, to run hand in hand with Area Meetings, is one which should commend itself to growers, both large and small, particularly to the smaller man who, all too frequently, finds himself faced with a problem which he himself cannot answer. All too frequently too the man in trouble has difficulty in finding someone to turn to.

Over the years the MGA has done much to close this gap and has itself gained considerable strength by this particular action.

The promotion of Area Meetings brings together growers who might otherwise rarely if ever meet, and the resultant discussions and the striking up of acquaintanceships, can only result in benefits all round.

It seems to me that this move by the MGA is timely, particularly so because there is a tendency nowadays on the part of some growers to drift together in little cliques, from which circle they rarely if ever emerge to play their full part in this organisation.

All of us know, only too well, that the running of a modern mushroom farm requires undivided attention and, as one of the Trade
Journals recently rightly said, mushroom growers are dedicated men.
But it is also true that there are times when a man can get too close
to his job—become so dedicated that he is unable to see the wood for
the trees. Area Meetings could do much to let in the light and, indeed,
have already done so.

The hope is then that there will be more and more Area Meetings even though it may not always be possible to combine such meetings with farm walks.

WRA

STUDIES ON THE INFLUENCE OF CARBON DIOXIDE ON THE CULTIVATED MUSHROOM

By Dr. H. J. Tschierpe

Institut für Gemüsebau der Technischen Universität Berlin Direktor Prof. Dr. H. Riethus

(The original paper was published in "Die Gartenbauwissenschaft 24, 1, 18-75, 1959)

3. Results

Sporophore culture I Experiment I A

- 1. Four jars were fitted together and tightly closed, so that all metabolism products could accumulate. It was not intended to close the jars absolutely airtight. Only a certain accumulation of the volatile metabolism products had to be obtained.
- 2. Four further jars were fitted one after another and ventilated with room air (200 ml/min). Pinheads and buttons grew in all containers. The CO₂-concentrations in the unventilated containers increased very fast:

Day	0	1	2	4	
Volume per cent CO2	0.04	3.50	6.45	8.10	

In the ventilated containers the CO_2 -content was between 0.05 and 0.3 volume per cent. The lowest concentrations were measured in the container, in to which the room air came first. In the last of the four containers the CO_2 -concentration was 0.3 per cent. The airstream picked up the carbon dioxide developing from the compost and from the sporophores, so that the CO_2 -concentrations increased from container to container in the direction of the air-stream. The conditions were approximately the same during the four days of observation.

Jar 1: 0.051 volume per cent CO₂ Jar 2: 0.091 volume per cent CO₂ Jar 3: 0.220 volume per cent CO₂ Jar 4: 0.330 volume per cent CO₂

The experiment was interrupted after four days. Two mushrooms typical of each treatment are shown in figure 14.



Fig. 14: Sporophores of the experiment I A grown in (from left to right) 1. 0.33; 2. 0.091 volume per cent CO₂ (ventilated jars). 3 and 4 (accumulation jars) in 8.1 volume per cent CO₂ (The CO₂ data for the sporophores 3 and 4 are maximum values of the fourth day).

Total Weight in g.	Total Length in mm.	Cap diam.	Stem diam. at the annulus in mm.	Stem. diam. at the base in mm.
5.20	53	23	9	12
10.05	55	32	14	13
4.32	48	16	10	19
2.23	40.5	12	8	14
	Weight in g. 5.20 10.05 4.32	Weight in g. Total Length in mm. 5.20 53 10.05 55 4.32 48	Weight in g. Total Length in mm. Cap diam. in mm. 5.20 53 23 10.05 55 32 4.32 48 16	Total Weight in g. Total Length in mm. Cap diam. in mm. at the annulus in mm. 5.20 53 23 9 10.05 55 32 14 4.32 48 16 10

Only the mushroom grown in an air with 0.091 volume per cent has nearly a normal shape. The other three are abnormal. It is interesting to note the decrease of weight combined with the reduction of the cap diameter.



Fig. 15: The influence of high CO-concentrations (Exp. I A, set 1) on sporophores in a state between "pinheads" and "buttons". Note the unnatural lifting of the cap. (Distance between two marks=1 mm.).

The pinheads in the "accumulation" containers died without changing their form. At the beginning of the treatment bigger mushrooms (height 0.6 to 0.9 cm.) pushed up from the base a relatively thin stem. The proportions were those of buttons, their absolute size that of a very early button stage. They did not grow further in normal air but "dried out" without having developed spores. This was also observed In many further experiments. Sporophores growing later developed under normal conditions in the same jars to normal sporophores (see fig. 16).



Fig. 16: Between two "poisoned" sporophores grows a normal button. No further growth of the malformed mushrooms.

Experiment I B

This experiment included 4 sets of 4 jars, one after another.

Set 1: Accumulation.

Set 2: Accumulation and circulation.

Set 3: Circulation and absorption of carbon dioxide with Soda-Lime.

Set 4: Ventilation with room air. Airflow 400 ml./min.

The experiment was finished after a treatment of 7 days. The results are shown in table 8 and in figures 17 to 20.

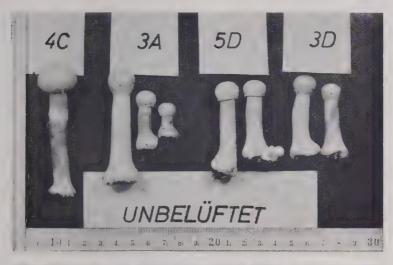


Fig. 19: Sporophores grown in circulated air. (Exp. 1 B) CO₂ absorbed down to 0.3 volume per cent. The cap opens normally but abnormal elongation of the stipe.



Fig. 20: Sporophore developed in a jar which was continuously ventilated with room air (Exp. I B).

Fig. 17: Sporophores grown in still air in accumulation ars (Exp. I B). Maximum CO₂-concentration 12 volume per cent.



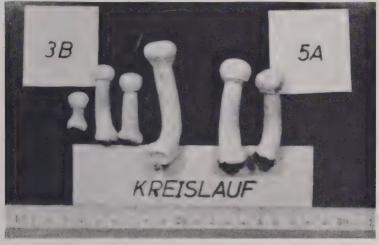


Fig. 18: Sporophores grown under accumulation and circulation conditions. CO₂-concentration at the end of the treatment 12.4 per cent.



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TABLE 9

Data of the sporophores of experiment I B

(All the sporophores are shown in figures 17 to 20)

Treatment	Total length in mm.	Cap diam. in mm.	Stipe diam. at the annulus in mm.	Stipe diam. at the base in mm.	Total weight in g.	Cap weight in g.
1. Accumulation CO ₂ -concentration max. 12.0%	81 71 36 23 60 50 57 52	24 17 13 11 15 15 14 12	13 10 8 6 9 9	18 22 16 13 17 18 19	9.44 6.46 2.06 0.98 3.90 3.30 3.21 2.66	3.17 1.17 0.55 0.33 0.79 0.65 0.55 0.42
2. Accumulation and circulation. CO· conc. max. 12.4%	24 48 43 76 68 60	12.5 13 14 20 19 18	6 8 8 11 11 11	12 15 15 20 17 17	1.10 2.51 2.52 7.47 6.23 4.46	0.48 0.53 0.69 1.52 1.76 1.26
3.CO ₂ absorption down to 0.3%	120 140	42 60	11 15	15 21	9.97 21.42	3.13 7.30
4.ventilation with room air	64	45	9	14	6.76	3.99

In the sets 1 and 2 the CO_2 -concentrations were increased in the 7 days to 10.5 to 12.4 volume per cent. The sporophores in both sets showed severe malformations: they had extremely long stalks and were thickened at the base; the caps did not open, spores did not develop. At the end of the treatment some of the sporophores were perishing. In the set 3, in which the air of the jars was circulated and the carbon dioxide was absorbed, the carbon dioxide content was 0.3 per cent. The developing sporophores had also abnormally long stalks, but the thickening of the base was less, the caps opened and spores developed. Normal sporophores developed only in the set which was continuously ventilated with room air (0.04%) CO_2 .

The whole experiment was repeated twice with the same results. It was interesting to note that in all sets with high CO₂-concentrations the absolute weight of the developing mushrooms was low and that the cap: stipe ratio was shifted in favour of the stipe. The growth of sporophores was completely stopped in all cases at CO₂-concentrations of about 11 volume per cent. The tissue became glassy, transparent and the sporophores died.

2. Sporophore culture

Experiment II A

Four jars with pinheads and buttons came into accumulation conditions. In order to avoid too high CO₂-concentrations and therefore the death of the sporophores, a hole (5 mm, diam,) was bored into every container. The hole was 2 cm. from the top of the container. After 120 hours the CO₂-concentrations were between 4.0 and 5.2 volume per cent. The malformed sporophores after a treatment of 5 days are shown in figure 21. The corresponding data are in table 10. The shifting of the cap: stipe-weight ratio in favour of the stipe is especially marked. It is on average about 1:5. In these sporophores, which were very small at the beginning of the treatment, the ratio reached about 1:10. Also worthy of notice is the abnormal formation of the veil, which also occurred in all similar experiments. The veil does not rupture normally, it remains mostly attached to the cap and has a loose, spongy structure. If sporophores remained under accumulation conditions they died off, without opening and without having fully developed sporophores. The hymenium was very weakly developed and of grevish colour.

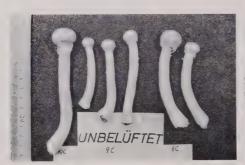


Fig. 21: Sporophores grown under CO₂-accumulation conditions (Exp. II A). CO₂-conc. at the end of the treatment 4.0 to 5.2 volume per cent. Note the abnormal veil.

 $\label{eq:table 10} TABLE \ 10$ Sporophore data of the experiment II

Mushroom No.	Total length in mm.	Cap diam.	Stipe diam. at the annulus in mm.	Stipe diam. at the base in mm.	Total weight in g.	Cap weight in g.
1	130	25	11.5	15	12.19	2.49
2	74	13	7	13	3.36	0.45
3	84	14.5	8	15	4.53	0.63
4	97	15	9	14	5.17	0.53
5	104	22	10	15	7.71	1.21
6	90	16	10	13	5.01	0.50

Experiment II B

In this experiment for the first time sporophores were ventilated with an airstream, which was artificially enriched with 10 per cent carbon dioxide.

- 1. Four jars in parallel were fitted together, the air in every container being changed ten times per hour. They were fitted in parallel in order to avoid an accumulation of self-produced volatile metabolic products, so that only the carbon dioxide from the commercial cylinder could influence the mushrooms. Airstream: commercial cylinder—water filled gas-wash bottle for humidification—distribution over T-pieces into four containers—outlet into room air.
- 2. In the second set the self-produced ${\rm CO_2}$ and the other hypothetical substances accumulated.
- 3. The third set was ventilated with $\mathrm{CO_2}$ -free air. Airstream: commercial cylinder —gas wash bottle with n/l NaOH for absorption of the $\mathrm{CO_2}$ in the compressed air —water-filled gas wash bottle for humidification—distribution through T-pieces into the four jars—outlet into room air.

After 5 days' treatment the sporophores in the airstream artificially enriched with CO_2 showed exactly the same malformations as the sporophores grown under accumulation conditions: long, basal thickened stipes, tiny caps, no sporulation (see figure 22—26). The mushrooms which grew in CO_2 -free air were quite normal.

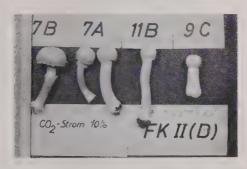


FIG. 22: Sporophore of the experiment II B after 5 days' growth in an airstream enriched with 10 per l'cent CO₂. The fruitbodies were of different size at the beginning of the treatment (see also figures 23 to 26). The sporophore shown at the left—the largest at the beginning—already perishing.

(to be continued)

MGA FLYER

Mr. John Stewart-Wood of Aylesbury Mushrooms Ltd., Aylesbury, Bucks., a former MGA Chairman, failed by only two points to carry off the Air Race Championship which concluded with the King's Cup on Saturday, 9th July, where curious handicapping saw him unplaced. Prior to that he had won the London-Cardiff race and was fancied to carry off the championship which he also failed to do in 1959 by a narrow margin. That year, members will recall, the King's Cup went to Mr. Spiller, another MGA member who shortly afterwards took his plane, with Mr. Stewart-Wood as navigator, over to Denmark, at the time of the International Conference.

"IN AT THE TOP"

By Major A. L. A. Dredge

Some seven years ago I purchased Combe Bank Market Gardens at a public auction. The farm had been suffering financial losses for some time and the only bidder against me wanted to convert it into a furniture store. By concentrating on shelf growing only, as against a mixture of shelves and trays, and reducing the staff, we managed to keep our heads above water and showed a reasonable profit. Last summer in company with most other growers, our profits dwindled owing to the intense heat and the crops were in a very bad way.

Unlike most other growers, we have not expanded except to build a small experimental house. Last spring, after reading articles on the subject, we tried out one crop bringing in the air at the top of the house and expelling it through an extract fan at ground level. The experiment was a success and the crop was considerably better than its predecessor which had been grown in the normal standard way with air entering at the bottom of the house and out at the top.

I was much impressed by ventilation methods at various Danish farms during the Fourth International Mushroom Conference at Copenhagen. Furthermore, I thought the most interesting lecture for the practical grower was that of Mr. Watson of Baker Perkins Ltd., of Peterborough, on ventilation. Mr. Watson showed me the lecture before it was read, with a view to discovering if it could be understood by a practical grower. I must admit that it took two readings before I fully grasped the impact of his theory.

Shortly after returning from Copenhagen Mr. Watson stayed the night at our farm and worked out a simple but effective overhead ventilation scheme for our rather odd-shaped houses. Just before Christmas last year we put this scheme into practice. The expert had suggested using a new type of woollen tubing which would let air out without causing a draft but in practice we used the normal 1 ft. diameter polythene tubing with the outlet holes pointing towards the walls.

The two diagrams opposite show the exact positions of the ducts at the top of the house. There is an ex W.D. powerful air blower (CFM—500 Average) which sucks in air through a 6" diameter asbestos tube which is covered with a piece of nylon stocking on the outside; the object of this of course, is to prevent air entering elsewhere and thus minimise the entry of flies. The tube runs the whole length of the ceiling. At the lower level opposite the door there is another asbestos pipe 1 ft. from the ground with suitable elbow bends to allow air to be re-circulated for the bottom beds. This is at the opposite end of the house and similarly, has 60 ft. of polythene ducting.

This solved the entry of air and we were advised to arrange the outlet by trial and error.

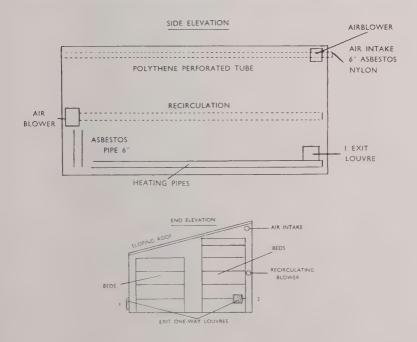
The object of the exercise is to build up a stronger air pressure inside the house, allowing it to escape only at near ground level through louvres. With the aid of pieces of cardboard (used as shutters) and stones

tied on with string as weights, we inserted three temporary "louvres" which were later replaced by three and finally two 1 ft. diameter aluminimum 'one-way' exit louvres. The louvre has to be sufficiently heavy to prevent drafts and flies entering but nicely balanced so that the air pressure inside the house can escape and with it remove the CO_2 .

Having heard the lecture and seen pictures of a mushroom growing in a bottle we were determined to remove the CO_2 . Reverting to the lecture on ventilation, it was stated that to obtain the correct number of air changes and remove CO_2 air should travel over the beds at approxmately 3 ft. per second. This was again achieved by trial and error with one member of the staff watching and six smoking as hard as possible on each bed in turn. It was soon found that the power of the air-blowers, combined with the two louvres, set up a nice steady air flow over all the beds.

Before completing the ventilation scheme I visited Barrow Farm at Churt and noticed that all the beds were curved. This undoubtedly assists in preventing pockets of CO_2 remaining on the top of beds and we therefore adopted this principle.

As compared with last year when straw was dry and droppings were few, our manure is undoubtedly of better quality. We also con-



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The results have proved very significant. No. 6 house, which was very badly ventilated previously, had an average crop 1.3 per sq. ft. over a period of four years. The first crop after the introduction of the ventilation scheme, was $2\frac{1}{4}$ lb. per sq. ft. and since then we have never had less than $2\frac{1}{2}$ lb. the latest crop gave .92 on its first flush and $1\frac{3}{4}$ lb. per sq. ft. in two flushes and appears to be well on the way to $3\frac{1}{2}$ lb. before being turned out. The half annual total statistics for the first six months of the year, when normal air movement was being used, showed a crop of 27,000 lb. while the second half of the year shows 45,000. Furthermore, each successive crop appears to be better than its predecessor and produces excellent quality mushrooms.

The air blowers are working non-stop and, up to date, we have found no CO₂ pockets. I consider that the ventilation scheme combined with ridge beds is removing 99% of it. In addition, fuel consumption for heating is reduced as cold air is no longer entering the house from all angles.

The Ventilators are produced by Cope Ventilation and Darlington's of Worthing. The Air Blowers are supplied by Bellanger Brothers through Shirley Organics Ltd. and Spawn is by Mount.

I should stress that up to date all the experimental crops have been grown in winter when convection plays its part in assisting air circulation. I expect even more significant results when the summer crops mature as I think the "In at the Top" system will completely counteract any loss of circulation through convection.

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MINISTRY'S MUSHROOM PROBE MERITS PUBLIC STATEMENT

There is no doubt at all that the trend in mushroom production continues on the up and up, partly due to increased efficiency on the

part of growers and partly due to out and out expansion.

Whilst growers may well be viewing the prospects of another hot summer with a somewhat jaundiced eye, with the inevitable floor prices in, say, June and July, it might well be advantageous to the industry as a whole if production was cut somewhat during the period when mushroom sales hang fire, and that "doldrum" period turned to good purpose by a thorough overhauling and cleaning up of the farm.

The interest of the Ministry of Agriculture in mushroom production has been plainly evident for some months now for, not only have members of the Mushroom Growers' Association been asked to give production returns, but, I gather, the Ministry have made an effort to ascertain the extent of production outside MGA members.

Full Support Given

It is to the credit of the MGA that they, as an organisation, lent full support to the Ministry—full support to an inquiry which could so easily show that the influence of the organisation in the industry is not as high as was generally supposed.

On the other hand of course, this inquiry could confirm what the MGA has claimed for a long time—that it does in fact, not only represent the industry as a whole in theory, but that its claim is backed up by the established figures, which may show just what percentage of production is in the hands of MGA members.

This being so, it is not surprising that, just at the moment, those connected with the Association are wondering just what these Ministry figures, if they are ever made public, will show.

I like an organisation that has courage in its convictions and I like an organisation which seeks the truth, whether the truth hurts or not. It could be that the MGA might get somewhat hurt in this particular matter, claiming as it has for some time that it represents something between 80 and 90 per cent of the total production of mushrooms in the United Kingdom.

The interest of everyone connected with the industry will not only be centred on this particular aspect for there has, for a long time, been a great deal of speculation as to the total U.K. production, said by the MGA to be in the region of 40 million lb. per year. Then again, the yearly increase in production has never been fully investigated, or, if it has, then the resultant figures as far as I know have never been published.

It will be seen therefore, that the Ministry's investigation could, once and for all, settle many interesting questions and I for one hope that the Ministry will, once they are satisfied that they have the true picture, publish some authentic facts and figures.

One way and another it is an intriguing business and I hope that the light, which has been let into this mushroom growing business over the past few years, will now be let into (1) the actual strength of the Mushroom Growers' Association, (2) the total U.K. production last year and (3) the rate of expansion.

SHORT COMPOSTING

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MORE AND MORE GROWERS ARE TURNING OVER TO THE SHORT COMPOSTING METHOD, DESCRIBED IN DETAIL IN MUSHROOM SCIENCE 2 BY J. W. SINDEN AND E. HAUSER.

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One, a shelf grower who on successive crops picked in excess of 3,000 lbs. off 1,500 feet in the remarkably short picking time of 3 weeks 6 days



The other, a tray grower using a shallow tray with not more than 4" of compost, is cropping 390 lbs. of mushrooms to the ton (8 cubic yards) of manure. Both have one thing in common: excellent crops of excellent quality, and of course

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SPECIAL MUSHROOM COMPOST ACTIVATOR GIVES
HIGHER FERMENTATION TEMPERATURES, AND A FIRST
CLASS COMPOST THAT ASSISTS THE SPAWN RUN

Many advantages are gained by using Adco "M" as an activator in composting. Chief among them is the higher temperature attained both in the compost heap and in the beds during the peak heating process. Look at the results that follow from these higher temperatures.

First of all, fermentation goes ahead at a faster rate. Composting takes less time and the finished product is ready earlier.

Secondly, you have greater assurance that your crop will be free of pests and disease. The higher temperature either kills off the pests inside the heap or drives them to the surface, where they can be dealt with by insecticides. High temperatures during fermentation are particularly vital in preventing disease such as Vert-de-gris, of which there is special danger when composting during the winter months.

More nourishment

If you use Racing Stable manure, or other manure in which excess straw is present, the use of Adco "M" is strongly advised. The fermentation of this type of manure takes place more rapidly and effectively when Adco "M" is added. You get a more thorough breakdown of the strawy material, which then becomes available as food for the growing spawn. So your compost provides more nourishment for the mushrooms, and you get a bigger crop.

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Adco "M" produces a good quality compost of even texture. It provides an

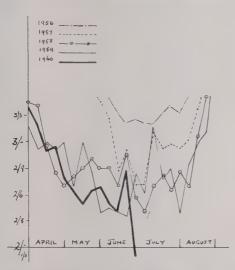
ideal medium for spawn run and helps to avoid greasy conditions, lack of aeration, and over wet compost—all of which delay mycelium growth. The spawn is able to make more rapid use of the food provided. It establishes itself more quickly and this is again a great help in preventing diseases and weed fungi. The faster the spawn grows and fills the compost the less likelihood is there of disease and weed fungi becoming serious competitors. A quick spawn growth also gives a quicker ultimate production.

You can have freedom from uncertainty in the composting process – by using Adco "M". It will pay you hands down. Adco "M" is specially formulated as a result of years of experiment, for the specific purpose of making mushroom compost. It can be used for composting with straw alone, if you wish. Or it can be used to compensate for variations in the quality and texture of your manure supply. Adco "M" provides the way to better mushroom compost every time.

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PINHEADS

217. It is our opinion that if conditions are not right during the second two weeks after casing the whole of the crop is affected. In other words the whole success of a crop (given good compost, freedom from disease, etc.,) depends on something being right just before and during the first flush pinhead formation. If there's anything in this it might mean that while the first flush is the result of a condition, it also *creates* a condition which lasts through subsequent flushes for better or worse.



218. Those complacent people who insist that everything in the garden is lovely might care to glance at our price graph. It represents the Summer Price Dip over the last five years. The figures are absolutely genuine and the graph is in no way faked. We have been keeping this kind of graph for the last 12 years and a very illuminating document it is! I have extracted the months April to August from 1956 onwards, and the figures are obtained by dividing the lb. of mushrooms

sold each week into the cash received for those actual consignments, and you can't be more accurate than that. The astute observer will see that the Summer Dip in 1956 was of minor importance, lasting only a short time and with prices never falling to 3/-. In 1957 the Dip extends over a longer period with a marked drop at the end of June and early July to well below 3/-. At and up to 1957 the Summer Dip was associated with and attributed to the sudden supply of soft fruits, strawberries, raspberries, and so on. After 1957 the period has extended downwards and sideways enormously, and quite beyond the range of the soft fruit season. Whereas in 1956 there was no period with prices down to 3/-, there is now a period Mid-April to Mid-August with prices below 3/-. It is not without significance that the Dip is extending mainly one way-towards the beginning of the year. If it is argued that hot weather is responsible for the extending low price period I would remind you that 1958 was not a hot year, nor was it a dry one. It beats me that anyone can smugly suggest that prices are holding and we should be happy about it. Consider the average yearly prices: $1955 - 3/7\frac{3}{4}$; $1956 - 3/6\frac{1}{2}$; $1957 - 3/5\frac{1}{4}$; 1958 - 3/2; $1959 - 3/1\frac{3}{4}$; 1960 - ? To some people it seems to be sound logic that while all our costs go *up* our mushroom prices should remain the *same*, or preferably go *lower*. Well, they're *going* lower for a longer period each year, so doubtless these types are cock-a-hoop. But are *we*?

- 219. We grow a few tomatoes in an amateurish way, which may explain why we grow bigger and better crops in boxes of *neat* spent compost (forgive the term!) than in specially prepared beds. The compost seems to need no supplement or boost; plants get going more quickly and retain a very healthy appearance throughout their life. Surprisingly they don't all run to stalk and leaf at the expense of fruit. Good stuff, this compost.
- 220. I have no financial interest in Darlington's, though perhaps I would not be surprised to receive a dividend of one free carton of spawn for this unsolicited advert. I have just received, for no known reason, a free copy of their Mushroom News, vols. 3-6. Bound in this fashion, entirely uncluttered by adverts, it is a most valuable addition to one's (a) library and (b) knowledge. An admirable reference book. I have always held, though never as far as I remember in print, that were it not for a natural bias in the omission of any reference to other products than their own, Darlington's "News" is for the practical grower the best available periodical today. The fact that it comes without cost each quarter in no way reduces its value. It's articles are essentially down to earth, with an almost complete absence of the blinding science which occasionally and unfortunately pervades our own Bulletin. The trade tie-up is regrettable as without this (admittedly unobtrusive) bias, it would be the most comprehensive practical literature ever presented to the grower. (Make it two cartons, Bob!)
- 221. A wholesaler told us the other day: "You can't lose money in the fruit business. Starting from scratch you can be wealthy in no time." When asked how they fared in bad times, he replied "There is no such thing as a bad time in our business." Perhaps you don't believe it. But if you do, there must be a reason for such rigid and relentless success. Here's one. We are asked to believe that all fruit commission salesmen are scrupulously honest. But the temptation to be dishonest must be very real to those hovering on the integrity brink. Consider this. Your man could sell your mushrooms at say 3/- for cash (as opposed to a cheque), and enter on his sales return a figure of 2/6. On this entered figure he charges you 10%, or 3d. Charged with not seriously attempting to get you a good price he would argue that obviously it's to his interest to get as much as possible because his 10% commission would yield him a higher figure. True, but he knows also there's a better way to get a much higher figure. If he sold at and entered 3/- his 10% would give him 3½d. But if he sold at 3/- and entered 2/6 he would get 3d. (10% on 2/6) plus 6d. (the difference between the actual selling price and the entered one). That would give him 9d. total profit against the 31d. he would get from an honestly returned 3/-. It is known that this sort of thing really takes place and we've no come-back except a standing invitation to inspect their books at any time. But the books would have the 2/6 entry, so what? Something

Storlin Mach.

GRAIN

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like this would explain why mushrooms are often sold at 1/3 and 1/6 per qr. at times when we are getting no more than 2/- lb., or 6d. per qr. Certainly someone is taking too much somewhere along the line. (Against this greed and/or dishonesty, we have had examples of salesmen returning us more than their own selling price, but this is only rarely: for example when they've wanted to retain our confidence in a sudden and unexpected glut). It's unfortunate that any attempt to beat the tax men also makes us suffer. From personal experiences I could enlarge considerably on this "racket" theme. (But you won't! Editor.)

222. I have made occasional references to a belief that what's in a stack of compost is more important than what we do with it. Of course we must compost it, "cure" it. But the difference between good and bad composting is, we think, far less than the difference between adequate good contents and bad or inadequate contents. I suggest the crop is determined rather by the manure you buy plus your favourite supplements than by your method of composting. Acting on this belief we are now making stacks that comply with no scientific or current recommendation. We are not being deliberately non-conformist, defiant, unconventional, stupid, idiotic, careless, isolationist, antiscientist, or anything else. We are arranging our composting to suit us, not to suit the compost! This enables us to cut time and labour (and yields—chime the experts!) Our stacks are now rough and ungainly (in the early turns) and formed into large squares, up to 14 yards each way, with varying heights from 10 feet to 3, according to turn. All out in the open, come scorching sun or biting blizzard. As one of our Yorkshire hands says, "It's what's in't muck that counts, not how you tew it about." To which another replied, "Nay lad, it's what comes out o't muck that matters." They're both right-I think.

MGA CONTINENTAL TOUR

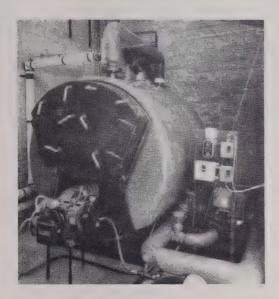
One thing which emerged from the MGA tour of Holland, Belgium and France, which took place from 21st June to 25th June, starting at Rotterdam in Holland and ending in Paris, was that because of the type of mushroom now being produced and the scale of production, especially in Holland, there is little immediate danger to the English market.

The production potential in some of the vast caves in Belgium and France should, nevertheless, not be overlooked.

A smooth and uneventful flight saw the main MGA party arrive at Rotterdam in the middle afternoon and, early that evening, a visit was paid to the Floriade, the main object being to see the special exhibit dealing with mushrooms. This took the form of a growing room, with trays of mushrooms flourishing under controlled conditions behind glass. The exhibit, which aroused considerable interest, was staged by the Dutch Research Station and the trays were supplied by MGA Member, Mr. J. P. H. Woltman of Wassenaar.

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A pleasant general view of the Horst Mushroom Experiment Station, Holland. (Picture by F. C. Atkins)

At Horst, Limburg, next day the party, numbering nearly thirty in all, was welcomed by Dr. P. J. Bels, Director of the Mushroom Research Station there. With him were Mrs. Bels, members of the advisory staff and some Dutch mushroom growers.

Dr. Bels said the Station was opened in 1959 and had a staff of eleven. It was supported by the majority of Dutch growers and by the Dutch Ministry. The number of growers in Holland was 520 in 1959, 350 of whom financially supported the station. About 1,000 samples were received from growers in the last year and members of the Station staff paid growers about 100 visits monthly. "We walk much faster to the 350 growers who subscribe and much slower to the 150 who do not" said Dr. Bels. He described as "boloney" the suggestion that the Dutch were threatening the English market although he agreed that



Left to Right (at Holst) Peter B. Stanley-Evans, MGA Chairman; Dr. P. J. Bels, director of the Station; Dr. H. C. Bels Koning and Guy Man, president of the Belgian MGA

the number of growers now stood at 520 and annual production at 5,000,000 lb. Consumption in Holland was only at the rate of 3 oz. per head per year. Chairman of the MGA, Mr. P. B. Stanley-Evans, thanked Dr. Bels, the Research Station Board, the staff and the Dutch mushroom growers for their hospitality, which included an excellent lunch at a nearby restaurant. Dr. and Mrs. Bels provided the liquid refreshment.

After lunch the party inspected the Research Station before visiting the tray farm of Mr. L. Hendrix at Grubbenvorst and the shelf farm of Mr. L. Mertens at Blerick near Venlo. Mr. Hendrix, with about 10,000 sq. ft. composts from 10 to 12 days with 2-5 days pasteurising period. He takes five crops a year, averaging 1.2 per sq. ft. and fills 200 sq. ft. per ton of manure. Peat and loam are used for casing.

Main features of Mr. Mertens' newly constructed shelf farm of 3,500 sq. ft. was the floor heating system, with 1" lagged pipes set 1" below the concrete at 8" intervals. Cost of installing this per house of 1,750 sq. ft. was £325 and the special meccano-like galvanised iron shelf and roof supports worked out at £180 per house. Production on this farm was 5 lb. per sq. ft. per annum. Composting took 15 to 20 days.

Tea was taken on the side of a pretty lake at Helderpeel, the party again being the guests of the Dutch growers. And so to Maastricht.

Wednesday morning saw the party at the vast limestone caves of M. Guy de Man at Kanne, dating back to Roman times. At the moment, in these caves alone, M. de Man has 88,000 sq. ft. of trays. There is room for well over half a million sq. ft. A fuller description of these caves and M. de Man's growing methods will appear in another issue of *The Bulletin*, as too, will a description of the methods and caves of M. André Sarazin at Cuts, visited on Friday, where a revolutionary method of mechanical composting excited the greatest possible interest.

The visit to M. de Man's caves was followed by a short walk in another set of caves where ridge bed production is still carried out. Later, the entire party was entertained to lunch by M. de Man at the Chateau de Nederkanne, which sits astride the Dutch-Belgian border. Here the visitors were splendidly entertained in a quite delightful setting, including a visit for liqueurs and coffee to the wine caves.

En route for Brussels, a halt was made at Hoepertingen where M. J. Lowette spent £10,000 on converting an old brewery to what, in the visitors' opinion, was a well laid out and efficient large tray system farm, where, as in every other case, the emphasis was on the production of a small button mushroom. M. Lowette and his family entertained the party to tea in their house nearby.

At Brussels M. and Madame Guy de Man were entertained to dinner, attended by all the visiting party.

The journey next day was through many of the old 1914-18 war battlefields including Mons. Communal lunch was taken at Noyon, where the party was joined by M. André Sarazin and by Mr. F. L. Filmer, the MGA Hon. Treasurer. It was after lunch that the party visited M. Sarazin's caves before setting out for Paris, being entertained to refreshments, en route, by M. Sarazin.

311



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And so to Paris where pouring rain failed to dampen anyone's spirits.

Saturday morning was spent sightseeing in Paris and your Editor/Secretary took the opportunity of visiting M. Dekeriel, Secretary of the French Federation of Mushroom Growers. M. Dekeriel was kind enough to show me round his co-operative.

By 4 p.m. the main party was back at London Airport after a tour which was extremely pleasant and interesting.

Special thanks are due to all those who entertained the visiting growers and allowed them to inspect their various farms, and in particular to M. Guy de Man, who was responsible for the organisation work on the Continent and who worked untiringly to make the tour the success it undoubtedly was.

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CORRESPONDENCE . . .

Much has been written already about over-production and the evils thereof and if we add Mr. Middlebrook to Dr. Edwards we are presented with a very simple choice:—

- 1. To control over-production by something on the lines adopted by the hop growers, and this might well mean the Association might have to form its own Marketing Organisation.
- 2. To increase our Publicity efforts to a worthwhile level—a minimum of £32,000 per year— which might conceivably bring demand and production somewhere near each other.

Or perhaps we should do both!

John H. Scrimgeour

WOMEN JOURNALISTS ENTERTAINED

Kent Mushroom Farm Visited

It is not often that the MGA organises an outing for women cookery writers, but on such occasions when the Association has done so, it has established a reputation for doing this sort of thing well.

The pattern was set some years ago by a party at the Women's Press Club, followed by a visit to the Broadham Produce Co.'s farm at Oxted in Surrey.

It is always extremely useful in the matter of publicity to organise something "that is different" and, in an effort to achieve just this, the MGA Publicity Committee decided to take a party of women journalists to a Kent mushroom farm on June 9th. Part of the journey



Just about to be received on board is Capt. Jarvis, Chairman of the NFU Publicity Committee, who asked specially to come because "I want to see how the MGA sets about this publicity business." In the centre are Mr. and Mrs. P. B. Stanley-Evans with Mr. G. W. Baker. Nearly all the members of the MGA Publicity Committee can be seen.

in itself was different—the ladies were taken as far as Gravesend by boat. This, according to them, was the first time ever that such a mode of travel had been used in this particular respect. In addition the mush-room farm too was different, inasmuch as the Darland Agricultural Products Ltd., farm at Fort Darland, Gillingham, makes use of a number of underground chambers, initially constructed as part of a chain of Medway forts late in the 19th century and housing troops in the 1914-18 war and stores in the Second World War.

I feel sure that we can all look forward to more and more mushroom publicity, with editorial mention, in recipes and at cookery demonstrations, following this "day out with the MGA."

The boat journey commenced from Charing Cross Pier, the food, specially prepared by The Belfrey, one of Londons' top restaurants, having been taken on board earlier.

Chairman of the MGA, Mr. P. B. Stanley-Evans with Mrs. Stanley-Evans personally received all the guests. Members of the Publicity Sub-Committee too, were present in force.

By 9.30 the boat was organised and the guests began to arrive, many with raincoats over their arm, uncertain of the weather. (The previous day—torrential rain. One of the guests had been asked by a friend on the telephone if she was going if it rained. Her reply was,

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Southport Flower Show

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STAND No. 191

"I am going if it snows"!) Guests included Helen Burke—Evening Standard, Monica Mawson-Evening News, Clare Butler-Daily Telegraph, Evelyn Rose-Manchester Evening News, Jane Beaton-Womans' Own, Sheila Watson—Women's Journal, Yvonne Trethewy —Homes and Gardens, and others representing Good Houskeeping, House & Gardens, Modern Woman, Family Doctor, Jewish Chronicle, and Weekend; Chief Home Service Advisers from the Gas Board, and members of the Electrical Development Association and the Electrical Association for Women: Home Economist from the Potato Marketing Board, Fleetway Publications, J. Walter Thompson's; and last but by no means least, representatives from the Trade Journals.

Coffee and other drinks were served on the upper deck and, with the weather reasonably warm and fine, the journey down river was

packed with interest.



Being helped aboard is Mrs. Baker of the Electricity Board.

Lunch was served in the saloon below and, particularly for the gastronomics, the Menu was:—

> Jambon de Parma et Melon Creme aux Champignons

Homard Froid

Mayonnaise Champignon froids

Tomates Salade des Pommes de Terre

Tarte aux Fraises Creme Fromage Assortie

with, of course, specially selected wines and liqueurs.

Cafe

It will be apparent to some members that the hand of a former MGA Chairman, Mr. Raymond Thompson, is evident with this menu.

Over coffee the MGA Chairman warmly welcomed the guests and stressed how much the industry owed to the praise bestowed on the mushroom by women writers.

Then the praise flowed, not only for the mushroom, and the Association, but also for the thought and trouble which went into an outing of this kind. This praise was voiced first by one of the leading women cookery writers of our time, Helen Burke of "The Evening Standard", who was followed by Monica Mawson, whose "Evening News" contributions are read with great interest



Monica Mawson of "The Evening News" has a close up of a small clump of mushrooms. In the background is Mr. Tumbler manager of the Darland Agricultural Products mushroom farm.

A word about the menu card itself. Additionally this contained a complete plan of the lay-out of the Fort Darland farm and a description of the growing methods together with a brief history of the Fort itself.

This was written by Mr. Derek Clifford of Darland Agricultural Products who, on arrival of the party from Gravesend by coach, organised three parties for the farm tour and also made a short speech in the packing shed, where tea was later served prior to the return of the party to London by coach. As each guest left she received a chip of mushroom and a most attractive "Mushroom" tile, specially prepared and given to the Association by Carter's Tiles Ltd., of Poole, Dorset.

It was a successful and memorable day—may it bring much mush-room publicity. (VB)



The visiting journalists were very interested in the packing and grading at Fort Darland. (see previous page)

FANCY THAT!

An MGA spokesman yesterday denied a rumour that the MGA is proposing to distribute free, bound copies of *The Bulletin*. He said "I believe this rumour originated from some Northern person". He added "It just isn't true. Neither do we propose to sell them for a Bob either!"

Editor's Note: There is definitely no connection between this and Pinhead 219.

MUSHROOM TRAYS

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LIVING OFF EACH OTHERS' BACKS (see Pinhead 209)

As I read it, between the Pinheads, Stanley Middlebrook is all in favour of keeping in business the grower who does badly. After all, in his way, the business failure is as good a man as the next and just down on his luck.

There are a number of variations on this theme that I can think of. Lately the taxicab drivers in London wanted their numbers fixed at the present level because "supply just equalled demand." Years ago the hop growers said a similar thing. In the U.S.A. farmers are paid for not producing crops. The result is that we will pay more for taxis if their numbers are restricted, we do pay more for our beer and, in U.S.A., consumers pay more for their wheat.

For any country as a whole, this is economically a bad thing. However narrow our interests, we are, I think, able to appreciate the value of competitive private enterprise. Or we say so at Election time!

What I am beginning to suspect is that Stanley is in favour of private enterprise—without competition. In favour, in short, of a Mushroom Marketing Board, by which competition could be eliminated and prices fixed—and everyone knows just how prices can be fixed!

Why should we be soaked by the taxi drivers, the hop growers and the wheat farmers? They'll still be able to relish their Mushrooms, which will taste as good but which will cost more.

In fact, the more prosperous we become as a country the more we can afford to live off each others' backs.

Ernest Palfrey

CALYPSO . . .

BBC GARDENING CLUB (8th July)

In one of Percy Thrower's Gardening Talks An old and empty ammunition box Took five pounds each of peat and concentrate Made spongy wet by watering it; Pressed down and spawned, eight days elapse, Then cased with peat and limestone chips, To keep it moist with water-vapour Just place in dark 'neath wet newspaper; Then if a temp. of fifty-five one keeps One pulls a crop which lasts nine weeks. Alas! Methinks the game is up, I would the dregs in poverty sup,-Or, should I take the bull by horns And purchase concentrate in tons, Or, Buy a live ammunition box And plot a plan for B.B.C. Guy Fawkes? On second thoughts, the plot and concentrate Which I'll support and advocate Will be for you and me to plan and plot And concentrate on what we've got!

F.P. (BELFAST).

THE LATE J. E. R. SIMONS

We record with regret the death of Mr. J. E. R. SIMONS, of Natts Farm, Harlow, Essex, who served on the MGA Executive Committee from 1950 to 1953.

In 1923, Mr. Simons joined the staff of Murphy & Son Ltd. (now the Murphy Chemical Co. Ltd.) and three years later went to Geo. Monro Ltd., being appointed Sales Manager in 1933. He resigned in 1950 to form his own company, J. E. R. Simons Ltd., with the exclusive selling agency for Mount Spawn. Under his able direction the company rapidly became one of the leading sundries firms in the mushroom business.

He served for many years on the Executive Committee of British Insecticides Manufacturers and on the Council of the Horticultural Fertilizers Association, and was an original member of the Committee of the Industrial Pest Control Association. He was particularly interested in packing and packages, several innovations during the past 20 years being based on his ideas, and in 1951 he was Chairman of the MGA Publicity Committee.

"J.E.R." is particularly remembered by the Editorial Board for his persuasive advocacy of a monthly *Bulletin* to replace the quarterly, and for his initial guaranteeing of the success of one page each month devoted to Small Advertisements.

His passing is all the sadder because he appeared to have recovered so well from his recent serious operation, and was speaking as ever of future prospects when we last saw him at the Annual Meeting in March of this year. Our particular sympathy goes out to his Widow who shared so loyally in his independent career, and to his family of two sons and two daughters.

The funeral took place at St. Mary's Church, Harlow, on 18th July, and the MGA was represented by the present Chairman, Mr. P. B. Stanley-Evans with Mrs. Stanley-Evans.

It is announced that J. E. R. Simons Ltd. will continue under the direction of Mr. Roy Simons, who himself is a familiar figure in the mushroom industry and whose past association with the firm has included mushroom production, now carried out on an extensive scale.

FACTS AND FIGURES FROM AUSTRALIA

Until a year or two ago, Mr. G. D. Griffin was a successful mushroom grower in the South of England. Now in Australia he has visited many mushroom farms in Victoria and New South Wales and writes as follows.

The purpose of the visit was:-

- (1) Try to ascertain present production in both states.
- (2) Gauge future output.
- (3) Ascertain present and future trends in cultural methods.

The present annual production (1) by all-year growers would not exceed 1,500,000 lb. in New South Wales, and 250,000 lb. in Victoria, half of which would undergo processing. However, outdoor ridge-grown mushrooms are produced in the Windsor area of New South Wales to the amount of 2,000,000 lb. more or less, depending on seasonal conditions. Most of these are processed by local canning factories.

Future output (2) will depend to a large extent on individual growers overcoming their expansion problems, as 60% of the all-year growers are growing in tunnels and caves and none of the house growers has cooling equipment. Seasonal outdoor growers are not favoured by the canneries owing to the inferior quality of mushrooms produced. However, there is a strong demand for mushrooms and production may well increase by another 1,000,000 lb. in the next five years in New South Wales. I may add that almost 90% of mushrooms grown in Australia are produced in New South Wales, and 80% of these are grown within 60 miles of Sydney.

Present cultural methods (3) vary considerably from farm to farm and there has been great ingenuity to overcome individual problems. Undoubtedly there is room for improvement in cultural methods. There are only a few growers who are likely to, or want to make, any break-through from the existing pattern of cultural methods. I say "or want to" because so many are getting good and relatively trouble-free crops. They have a healthy respect for change and resulting troubles. The pattern of production is on the average United Kingdom method, but not so large and with less attention to hygiene. However, I must stress that it is the results that count, and growers in general are reasonably satisfied with these.

WESTON-SUPER-MARE CONFERENCE

Although some re-arrangement of the Weston-Super-Mare Conference programme has now taken place and Dr. E. B. Lambert of America may not, after all, be able to attend, there is every indication of a large attendance of growers and the vacant accommodation at The Grand Atlantic Hotel, where most of the activities will take place, is rapidly shrinking.

In addition to the lectures which will take place throughout Tuesday, 11th October, until 4.30 p.m. and all day Wednesday, the Golf Competition for the handsome silver rose bowl with miniature, presented by S. A. F. Sampson Ltd., will again be held, with the Chairman of the Organising Committee, Mr. Graham Griffiths, making these arrangements. There will also be a coach outing for ladies on Wednesday, 12th October.

At the request of the Weston-Super-Mare Corporation, the Civic Reception and the Dance will now be held on Wednesday evening, commencing at 8.30 p.m.

A conference charge of 30/- per head will be made to cover expenses and this charge will include all the activities.

LAST MONTH'S PUBLICITY CONTRIBUTORS

Contributions to the MGA Publicity Fund, from spawn levy contributions, were received last month from :—

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